

II. Remarks

A. Status of the claims

Claims 5-12 are currently pending and claims 5-8 have been amended. It is respectfully submitted that no new matter has been added by virtue of this amendment.

B. 35 U.S.C. §102 Rejection and 35 U.S.C. §103 Rejection over Thomashow et al.

In the Final Office Action mailed October 31, 2006, claims 5 and 7 were rejected under 35 U.S.C. § 102(e) as being anticipated by Thomashow et al. and claims 6 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Thomashow et al. In response, Applicants respectfully refer the Examiner to the arguments presented in Applicants' February 28, 2007 response and the following supplemental remarks.

In making the rejections, the Examiner stated that Applicants' argument that Thomashow et al. "does not describe the idea of introducing CBF genes into the plant together with a stress responsive promoter comprising a DRE region ..." was "not found to be persuasive because the recitation of the promoter in the instant claims is not limited to stress responsive promoter comprising a DRE region." See Final Office Action, page 3.

This rejection is respectfully traversed. As discussed in the Background of the Invention, The DREB1C gene binds to a stress-responsive element, such as DRE, and regulates genes located downstream of the element. If the DREB1C gene is ligated downstream of a constitutive promoter such as 35S promoter and introduced into a host plant, a plurality of genes regulated by DREB1C are consistently activated at the same time. As a result, the energy of the host plant is directed to production of the products of these genes and intracellular metabolism of such gene products, which often brings about the delay in growth of the host plant or dwarfing of the plant. See e.g., Specification, pages 2-3.

In contrast, in accordance with the present invention, if the DREB1C gene is ligated downstream of a stress-responsive promoter comprising a DRE region and introduced into a host

plant, the genes regulated by the DREB1C gene are activated only when stress is loaded. Thus, the stress-tolerance of the plant is enhanced without the delay in growth or dwarfing of the plant.

The transgenic plant of Thomashow et al. is analogous to the former situation as discussed in the Background of the Invention, in that the transgenic plant described therein is transformed with CBF1 (DREB1B) ligated downstream of 35S promoter, i.e. a constitutive promoter, and a sequence of DREB1C gene. Thomashow et al. do not teach or suggest the use of a stress-responsive promoter comprising a DRE region(s), nor do they teach or suggest a transgenic plant transformed with the DREB1C gene, as recited in the present claims.

Furthermore, Applicants submit that Thomashow et al. teach away from the use of a stress-responsive promoter. The Examiner is directed to column 24 of Thomashow et al. which recites:

...the promoter may increase the level at which the regulatory gene is expressed, express the regulatory gene without being induced by an environmental stress and/or express the binding protein in response to a different form or degree of environmental stress than would otherwise be needed to induce expression of the binding protein.... For example, a strong constitutive promoter could be used to cause increased levels of COR gene expression in both non-stress and stressed plants which in turn, results in enhanced freezing and dehydration tolerance.

Thomashow et al. column 24, Line 58-column 25, Line 2.

In the present invention, the use of DREB1C ligated downstream of a stress-responsive promoter comprising a DRE region(s) allows enhancement of stress tolerance of plants without delay in growth or dwarfing of the plants. Therefore, Applicants submit that, in view of the teachings of Thomasview et al., one of ordinary skill in the art would not be motivated to use a stress-responsive promoter, as Thomasview et al. teach away from the use of a stress-responsive promoter and only describe the use of a strong constitutive promoter.

Accordingly, in view of Applicants' February 28, 2007 response and the amendments and arguments presented above, Applicants respectfully request that the rejections under 35 U.S.C. §§ 102(e) and 103(a) be removed.

III. Conclusion

Reconsideration of the present application, as amended, is requested. If, upon review, the Examiner determines that the application is not in condition for allowance, Applicants respectfully request the Examiner to contact the undersigned for a telephone interview before an Office Action is issued in the application. A favorable action on the merits is earnestly solicited.

Respectfully Submitted,
DAVIDSON, DAVIDSON & KAPPEL, LLC

By: 

Robert J. Paradiso
Reg. No. 41,240

DAVIDSON, DAVIDSON & KAPPEL, LLC
485 Seventh Avenue, 14th Floor
New York, New York 10018
(212) 736-1940